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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/689,043	10/21/2003	Li Yao	60937-0151-US	4499

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EXAMINER

ALANKO, ANITA KAREN

ART UNIT	PAPER NUMBER
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1765

DATE MAILED: 08/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/689,043	YAO ET AL.	
	Examiner	Art Unit	
	Anita K. Alanko	1765	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 1/5/06 4/10/06.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-10 and 14-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2-10 and 14-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Election/Restrictions

Applicant's election of Group II in the reply filed on 1/5/06 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 2-10, 14-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsai et al (US 7,008,554 B2) in view of Sun et al (US 6,858,540 B2).

Tsai discloses a method comprising:

providing a substantially abrasive-free (since abrasives are optional, "may further include" is interpreted to mean that it may not include, col. 6, lines 17-18)CMP composition that

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includes a hydroxylamine derivative (1%, col.6, lines 49-51), a corrosion inhibitor (0.02% BTA, col. 7, lines 50-60), and water (col.8, line 8);

contacting the composition with a substrate 400 having a metal oxide surface 410, barrier layer 412 and metal layer 413 (col.9, line 64-col.10, line 34);

chemically mechanically polishing the substrate by contacting the substrate surface with a polishing pad 300 at an applied pressure of 2 psi (including a range of 1-2 psi, col.6, lines 6-7) and by moving the pad in relation to the substrate,

wherein the removal rate of the barrier layer is greater than about 500 Å/min (700 Å/min col.10, line 49, or in the range of 300-500 Å/min col.8, lines 55-56), and wherein the removal rate of the metal oxide layer is less than about 10 Å/min (because of the high selectivity, col.8, line 54, and since the same method is conducted, the same results are expected).

Tsai fails to disclose the type of polishing pad. Sun teaches that a useful pad for polishing includes a fixed abrasive pad (col.8, lines 14-18). It would have been obvious to one with ordinary skill in the art to use an abrasive polishing pad in the method of Tsai because Sun teaches that they are useful for polishing barrier layers.

As to claims 24-25, Tsai teaches a range of pH including 3-7 (col.7, lines 3-10). Since Tsai teaches a range, Tsai also teaches that the pH may be changed according to the desired polishing results. The pH affects the reaction kinetics. It would have been obvious to one with ordinary skill in the art to vary the pH to the range cited in the modified method of Tsai because the pH appears to reflect a result-effective variable which can be optimized. See MPEP 2144.05 IIB.

Terminal Disclaimer

The terminal disclaimers filed on 4/10/06 and 1/5/06 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration dates of 6,635,186; 6,117,783; 10/683,730; 10/690,623 and 10/401,405 have been reviewed and are accepted. The terminal disclaimers have been recorded.

Response to Arguments

Applicant's remarks about the double patenting rejection of 6,156,661 are persuasive, and that rejection is withdrawn. The allowable subject matter is withdrawn. Newly cited Tsai is used to reject the claims. After reviewing the parent applications, it is noted that priority for the abrasiveless polishing method, barrier layer polishing, and the various parameters (percentages, ranges, etc) are not found in the parent applications. Thus, the effective filing date for prior art is 10/21/03, and Tsai is prior art.

Conclusion

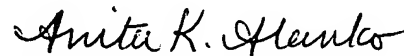
The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The cited art shows hydroxylamine polishing of semiconductors.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anita K. Alanko whose telephone number is 571-272-1458. The examiner can normally be reached on Mon-Fri until 2:30 pm (Wed until 11:30).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571-272-1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Anita K Alanko
Primary Examiner
Art Unit 1765